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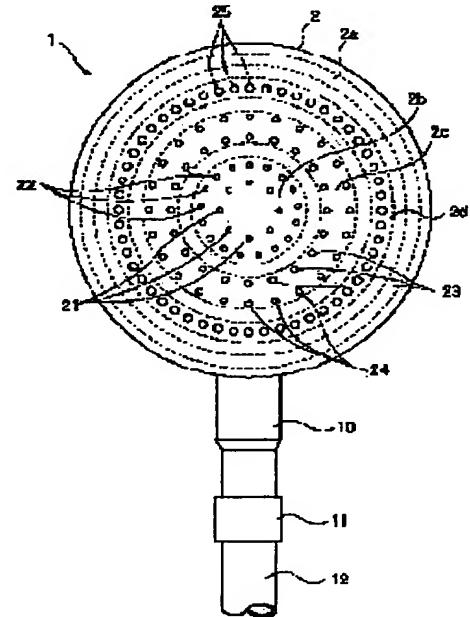
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## (54) SHOWER HEAD

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a shower head which can change over three water discharge areas different in water pressure feeling to make comfortable spray shower discharge state.

**SOLUTION:** This shower head 1 has a water discharge surface 2a divided into a middle area (narrow area) 2b, an intermediate area (medium area) 2c, and peripheral area (wide area) 2d. Many small holes 21-25 for discharging spray showers are bored in each area. Water discharge from the narrow area 2b alone, from both the narrow area 2b and the medium area 2c, or from all the areas 2b, 2c, 2d can be selected by rotating a water discharge part 2.



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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the shower head with which an organ bath, a washing-their-face dressing table, etc. are equipped. It is thin and is related with the shower head which added amelioration so that a comfortable shower could be changed by the large flow rate used for for example, a shower comfortable in the amount of middle classes which can change the vigor (rate of a molten bath) of a molten bath in the state of comfortable spray shower discharged water for example, by which it is especially used for cleaning or an end-crater stimulus, which are used for a high-speed shower and a hard shower, and a software shower.

[0002]

[Description of the Prior Art] The shower head is an instrument which it connects [ instrument ] at the head of a shower hose and gushes a stream from the discharged water side. Recently, multi-functionalization of the shower head is progressing and what can change and carry out the discharged water of the massage shower which gives an oscillation like a massage, and the spray shower which is divided and blows off from many stomata with the stream settled in the shape of about one rod is used. By the way, there is a concept of a "comfortable flow rate" in each shower head, respectively. This is the rule of thumb of the flow rate which can use a shower comfortably, and, generally has determined the "comfortable flow rate" in a test subject trial. It is a time of sensing that that the comfortable feeling of a shower becomes high has just right water temperature, quantity of hot water, and molten-bath paresthesia. To the comfortable flow rate of each head, a comfortable feeling shows the assessment inclination of an inverted-U character mold, and at least, even if there are many quantities of hot water, they sense that it is unpleasant.

[0003] 1mm of for example, apertures which are a standard shower – a hole – a number – in the 60 shower heads, a part for 10-13l./is called comfortable flow rate. moreover, when a test subject trial is performed, the inclination performed depending on how to feel molten-bath paresthesia is seen, and molten-bath flow regulation is adjusting the molten-bath flow rate of each head in a place when the water pressure force serves as about 1 kg per unit area. According to the data obtained by the test subject trial, the water pressure force in a comfortable flow rate is winter:0.75 gf/cm<sup>2</sup>. Extent and summer:0.97 gf/cm<sup>2</sup> It is said that it becomes extent. On the other hand, the shower head (trade name toast shower yoke yoke) which can be used by the 13-20l. large flow rate for /is also developed recently. However, a stream was not able to become weak and a shower was not able to be comfortably used for the shower which can be used in this large flow rate region in a small flow rate region.

[0004]

[Problem(s) to be Solved by the Invention] However, there was no shower head which can be comfortably used in the 7-20l. flow rate range large [ for /] by changing the size of the discharged water side of a spray shower conventionally. That is, according to liking of an individual, there was no shower head changed in the vigor of the amount of water spray or a stream and the size of water spray. Moreover, there was no shower head which is used for cleaning or an end-crater stimulus and which is thin and can carry out the discharged water of the high-speed shower.

[0005] This invention is the shower head with which an organ bath, a washing-their-face dressing table, etc. are equipped, can change the vigor (rate of a molten bath) of a molten bath in the state of comfortable spray shower discharged water, and aims at offering the shower head which is used for cleaning or an end-crater stimulus and which is thin and can carry out the discharged water also of the high-speed shower.

[0006]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, it is the shower head of this invention. While the discharged water side where many stomata were dug is divided and

arranged to two or more fields A means to choose the field which carries out discharged water actually is established. By field selection, it is the shower of a comparatively thin high speed. It is characterized by the ability to choose the shower of a comparatively thick low speed.

[0007] By selection of the size of a discharged water side field, the small flow rate region response in a comfortable spray shower discharged water condition, an inside flow rate region response, and a large flow rate region response can be chosen, and a comfortable spray shower can be offered with a broad quantity of hot water. Moreover, the shower head which is used for cleaning or an end-crater stimulus and which is thin and can carry out the discharged water also of the high-speed shower can be offered.

[0008]

[Embodiment of the Invention] The shower head of the operation gestalt of this invention While the discharged water side where many stomata were dug is divided and arranged at a thin field, an inside field, and \*\*\*\*\* A means to choose whether the discharged water of both whether the discharged water only of the thin field is carried out or the discharged water of both a thin field and the inside field is carried out, a thin field and an inside field, and the \*\*\*\*\* is carried out is established. By field selection Shower of a comparatively thin high speed It is characterized by the ability of size speed to choose the shower like inside, and the shower of a comparatively thick low speed. While the discharged water side where many stomata were dug is divided into a thin field and \*\*\*\*\* and the shower head of other operation gestalten of this invention is arranged A means to choose whether the discharged water of both whether the discharged water only of the thin field is carried out, a thin field [ and ], and the \*\*\*\*\* is carried out is established. By field selection, it is the shower of a comparatively thin high speed. It is characterized by the ability to choose the shower of a comparatively thick low speed.

[0009] Hereafter, it explains, referring to a drawing. The front view and drawing 2 which show the structure of the shower head which drawing 1 requires for one example of this invention are the side-face sectional view. It connects with the discharged water section 2 for choosing a shower field, and this discharged water section 2, and the profile configuration of the shower head 1 of this example is carried out by the body 3 for supplying a molten bath to the discharged water section 2. The discharged water section 2 is formed in the abbreviation bell shape, central field (thin field) 2b, staging-area (inside field) 2c, and discharged water side 2a divided into three of 2d of boundary regions (\*\*\*\*\*\*) are formed by the end side side, and the 1st plate 4 mentioned later is inserted in by the other end side side. The stomata 21-25 of a large number out of which a spray shower comes are dug by each field 2b of discharged water side 2a, and 2c and 2d. The stomata 21 and 22 which carry out the regurgitation of the shower of a comparatively thin high speed to central field (thin field) 2b are dug two trains (the 1st train and the 2nd train) in the shape of a concentric circle. Namely, to staging-area (inside field) 2c The stomata 23 and 24 to which size speed carries out the regurgitation of the shower like inside are dug two trains (the 3rd train and the 4th train) in the shape of a concentric circle, and the stoma 25 which carries out the regurgitation of the shower of a comparatively thick low speed to 2d (\*\*\*\*\*) of boundary regions is dug one train (the 5th train) in the shape of a concentric circle.

[0010] Three septa 26b, 26c, and 26d of the shape of a concentric circle for dividing each above-mentioned field 2b and 2c and 2d are formed in the centrum of the discharged water section 2 in one. Therefore, three \*\* 27a divided by each septum 26b, 26c, and 26d, and 27b and 27c will be opened for free passage with each stoma 21, 22, 23 and 24, or 25. Moreover, it is inserted in through 26g of wave-like stop sections prepared in the periphery section of the 1st plate 4, and the inner circumference section of 26d of septa of the outermost periphery so that it may stick to the end face whose end sides of the 1st disc-like plate 4 are each septa 26b, 26c, and 26d. And the 1st plate 4 and each septa [ 26b, 26c, and 26d ] contact surface is closed with O rings 6a, 6b, and 6c currently arranged in the each septa [ 26b, 26c, and 26d ] end face. Therefore, each above-mentioned \*\* 27a, 27b, and 27c will be constituted as space which became independent, respectively.

[0011] The body 3 is formed in the abbreviation bell shape, the end side side is closed, and the 2nd plate 5 mentioned later is inserted in by the other end side side. And the shank 10 of the shape of a pipe prolonged in one is connected to the hose 12 through the joint 11 from the peripheral surface of a body 3. moreover, the 2nd disc-like plate 5 – the centrum of a body 3 – it is mostly arranged in the center. The 2nd plate 5 is inserted in a body 3 through stop section 3a of the screw type prepared in the periphery section and inner circumference section of the centrum of a body 3. Furthermore, it is stuck to the end side of the 2nd plate 5 by heights 3b prepared near the stop section 3a. By this, the centrum of a body 3 will be divided into \*\* 3c which is open for free passage on a shank 10, and the discharged water section 2 with the 2nd plate 5.

[0012] The top view in which drawing 3 shows the field by the side of the stream upstream face of the 1st plate (revolution plate) 4 (left-hand side of drawing 2 ), and drawing 4 are top views of a part 5 where the

2nd plate (fixed plate) exists. Five holes 4a, 4b, and 4c located in a line in the diameter direction are dug by the 1st plate 4. That is, central hole 4a is formed in the location corresponding to the above-mentioned room 27a (central field (thin field) 2b). Two middle hole 4b is formed in the location on the periphery corresponding to the above-mentioned room 27b (staging-area (inside field) 2c). Two surrounding hole 4c is formed in the location on the periphery corresponding to the above-mentioned room 27c (2d (\*\*\*\*\* of boundary regions). Furthermore, two O rings 8a and 8b are arranged in the shape of a concentric circle so that each holes 4a, 4b, and 4c may be divided into the 1st plate 4. That is, inside O ring 8a is arranged in the location corresponding to the end face of the above-mentioned septum 26b, and outside O ring 8b is arranged in the location corresponding to the end face of the above-mentioned septum 26c. And O ring 9a is arranged, and O ring 9b is arranged so that two surrounding hole 4c may be surrounded, respectively, so that two middle hole 4b may be surrounded, respectively.

[0013] While five holes 5a, 5b, and 5c are dug by the 2nd plate (fixed plate) 5 in the location corresponding to each holes 4a, 4b, and 4c of the 1st plate 4, two hole 5b' is dug by the location which rotated two about 60 degrees middle hole 5b on the periphery. Here, the discharged water section 2 is inserted in by 26f of engagement sections of the shape of irregularity prepared in the inner circumference section of peripheral-wall 26e of the discharged water section 2 shown in drawing 2, and the periphery section of the peripheral wall of a body 3 so that it may be pivotable, without escaping from and coming out of the stowage of a body 3. And if the discharged water section 2 and a body 3 fit in in 26f of engagement sections, the end face of the 1st plate 4 and the end face of the 2nd plate 5 will be stuck through the O above-mentioned rings 8a, 8b, 9a, and 9b each. Moreover, the peripheral face of 26d of septa of the discharged water section 2 and the inner skin of a body 3 are stuck through 6d of O rings.

[0014] By this for example, by rotating the 1st plate 4 with the discharged water section 2, and making in agreement each holes 4a, 4b, and 4c of the 1st plate 4, and each holes 5a, 5b, and 5c of the 2nd plate 5, as shown in drawing 2 \*\* 3c of a body 3 and each \*\* 27a, 27b, and 27c of the discharged water section 2 will be open for free passage independently, respectively. Moreover, by rotating about 60 degrees of the 1st plate 4 with the discharged water section 2 from the condition of drawing 2, and making in agreement each holes 4a and 4b of the 1st plate 4, and each holes 5a and 5b of the 2nd plate 5 Since \*\* 3c of a body 3 and each \*\* 27a and 27b of the discharged water section 2 will be open for free passage independently, respectively and hole 4c of the 1st plate 4 is closed by the other end side of the 2nd plate 5 on the other hand, \*\* 3c of a body 3 will not open \*\* 27c of the discharged water section 2 for free passage.

Furthermore, since only hole 4a of the core of the 1st plate 4 and hole 5a of the core of the 2nd plate 5 will be in agreement when about 120 degrees of the 1st plate 4 are rotated with the discharged water section 2 from the condition of drawing 2 Since only \*\* 3c of a body 3 and \*\* 27a of the discharged water section 2 will be open for free passage independently and each holes 4b and 4c of the 1st plate 4 are closed by the other end side of the 2nd plate 5 on the other hand, \*\* 3c of a body 3 will not open each \*\* 27b and 27c of the discharged water section 2 for free passage.

[0015] If a molten bath is poured on a hose 12 in the condition which the shower head 1 of this operation gestalt is constituted as mentioned above, for example, shows in drawing 2, as a graphic display arrow head shows, a molten bath will flow in into \*\* 3c of a body 3 through the interior of a shank 10. And the molten bath which flowed in into \*\* 3c of a body 3 is shunted toward each holes 5a, 5b, and 5c of the 2nd plate 5, and flows into each \*\* 27a, 27b, and 27c of the discharged water section 2 through each holes 4a, 4b, and 4c of the 1st plate 4, respectively. According to an operation of O rings 6a-6d each, and 8a, 8b, 9a and 9b, each molten bath shunted at this time is mixed, or does not leak. And the molten bath which flowed into each \*\* 27a, 27b, and 27c of the discharged water section 2 passes along each stomata 21-25 of discharged water side 2a, and from central field (thin field) 2b of discharged water side 2a, staging-area (inside field) 2c, and 2d (\*\*\*\*\* of boundary regions, they are blown as a spray shower of a thick low speed, and it comes out of them.

[0016] If about 60 degrees of discharged water sections 2 are rotated from the condition which shows in drawing 2, since hole 5c of the 2nd plate 5 will be closed by the other end side of the 2nd plate 5, next, the molten bath which flowed in into \*\* 3c of a body 3 It shunts toward each holes 5a and 5b of the 2nd plate 5, and flows into each \*\* 27a and 27b of the discharged water section 2 through each holes 4a and 4b of the 1st plate 4, respectively. And it passes along each stomata 21-24 of discharged water side 2a, and size speed is blown as a spray shower like inside, and, as for the molten bath which flowed into each \*\* 27a and 27b of the discharged water section 2, comes out from central field (thin field) 2b of discharged water side 2a, and staging-area (inside field) 2c. Next, if about 120 degrees of discharged water sections 2 are rotated from the condition which shows in drawing 2, since each holes 5b and 5c of the 2nd plate 5 will be closed

by the other end side of the 2nd plate 5, the molten bath which flowed in into \*\* 3c of a body 3 flows only to feed-hole 5a of the 2nd plate 5, and flows into \*\* 27a of the discharged water section 2 through feed-hole 4a of the 1st plate 4. And the molten bath which flowed into \*\* 23a of the discharged water section 2 passes along each stomata 21 and 22 of discharged water side 2a, is blown as a spray shower of a comparatively thin high speed, and comes out from central field (thin field) 2b of discharged water side 2a.

[0017] In the shower head 1 of this example, three steps of discharged water side 2a of the shower head 1 can be changed by constituting in this way. That is, a comfortable shower can be changed with the large flow rate used for for example, a comfortable shower and a software shower in the amount of middle classes used for a comfortable shower and a hard shower by the small flow rate used for cleaning or an end-crater stimulus by changing discharged water side 2a. Moreover, at the shower head 1 of this example, the discharged water pressure of a spray shower can be substantially changed with the shower head 1 by changing discharged water side 2a. Although it is troublesome to change a flow rate at bibcock at the time of a shower activity, and to control the vigor of a shower, if it adjusts to a user's favorite discharged water pressure beforehand with the shower head 1, bibcock can be used by full admission. That is, discharged water side 2a is considered [ to strengthen a discharged water pressure ] as an inside flow rate region or a large flow rate region response to weaken a discharged water pressure by considering discharged water side 2a as a small flow rate region or an inside flow rate region response.

[0018] Here, 6-10 stomata 21 of the 1st train of central field (thin field) 2b are the diameter of 0.9mm, and eight pieces preferably the diameter of 0.7-0.9mm, and 12-20 stomata 22 of the 2nd train of central field (thin field) 2b of the path of stomata 21-25 and the range of a number are the diameter of 0.9mm, and 16 pieces preferably the diameter of 0.7-0.9mm. 18-24 stomata 23 of the 3rd train of staging-area (inside field) 2c are the diameter of 0.7mm, and 20 pieces preferably the diameter of 0.7-0.9mm, and 24-30 stomata 24 of the 4th train of staging-area (inside field) 2c are the diameter of 0.7mm, and 25 pieces preferably the diameter of 0.7-0.9mm. 30-50 stomata 25 of the 5th train of 2d of boundary regions (\*\*\*\*\*\*) are the diameter of 1.0mm, and 40 pieces preferably the diameter of 1.0-1.2mm. moreover, the water flow area of each field – central field (thin field) 2b – for example, 15.3mm<sup>2</sup> and staging-area (inside field) 2c – for example, 32.6mm<sup>2</sup> and 2d (\*\*\*\*\*\*) of boundary regions – 64.0mm<sup>2</sup> [ for example, ] it is .

[0019] Moreover, central field (thin field) 2bs of the breadth include angle, comfortable flow rate region, and the rate of flow of discharged water side 2a are 5-degree \*\*1-degree and 3-13l. a part (for an end-crater stimulus) for part (for cleaning) 3-8l./for /and 3 - 14 m/s (for cleaning), and 3 - 9 m/s (for an end-crater stimulus). Central field (thin field) 2b when taking out the shower like inside and staging-area (inside field) 2c are 9-degree\*\*1-degree and 7-14l. parts for /and 3 - 7 m/s. Central field (thin field) 2b and staging-area (inside field) 2c and 2d (\*\*\*\*\*\*) of boundary regions when taking out a thick shower are 11-degree\*\*1-degree and 11-20l. a part for /and 3 - 5 m/s. In addition, the breadth include angle of a thin shower was calculated by measuring the diameter (it having been 200mm for example) in directly under [ in case the diameter of central field (thin field) 2b is 20mm / 1000mm ]. The breadth include angle of an inside shower was calculated by measuring the diameter (it having been 300mm for example) in directly under [ in case central field (thin field) 2b and the diameter of staging-area (inside field) 2c are 37mm / 1000mm ]. It calculated by measuring the diameter (it having been 350mm for example) in directly under [ in case central field (thin field) 2b of a \*\* shower, staging-area (inside field) 2c, and the diameter of 2d of boundary regions (\*\*\*\*\*\*) are 46mm / 1000mm ].

[0020] In addition, the spray shower of a high speed comparatively thin as a thin field is made for central field 2b of discharged water side 2a to blow off in the example mentioned above. Although it constituted so that size speed might make the spray shower like inside staging-area 2c blow off as an inside field and the spray shower of a low speed comparatively thick [ 2d of boundary regions ] as \*\*\*\*\* might be made to blow off You may make it arrange not in the thing limited to this arrangement but in the combination of arbitration.

[0021]

[Effect of the Invention] According to this invention, by selection of a discharged water side field, the small flow rate region response in a comfortable spray shower discharged water condition, an inside flow rate region response, and a large flow rate region response can be chosen, and a comfortable spray shower can be offered with a broad quantity of hot water so that clearly from the above explanation. Moreover, the shower head which is used for cleaning or an end-crater stimulus and which is thin and can carry out the discharged water also of the high-speed shower can be offered.

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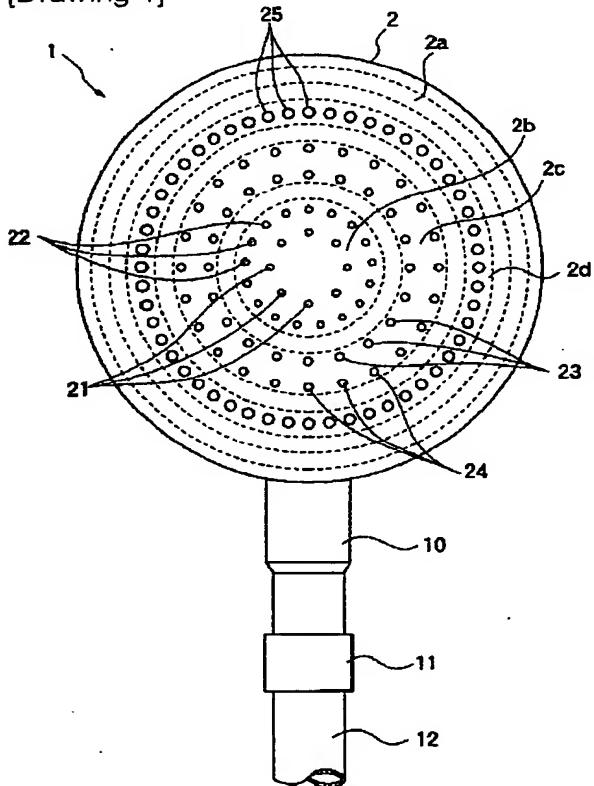
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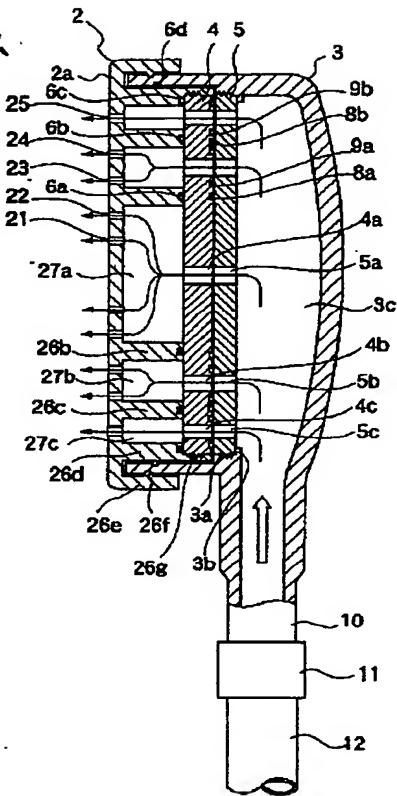
DRAWINGS

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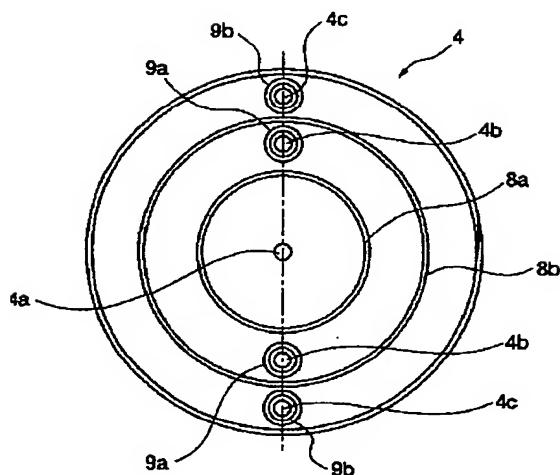
[Drawing 1]



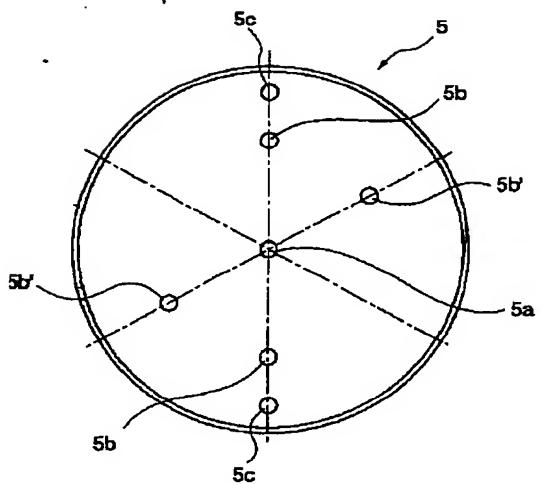
[Drawing 2]



[Drawing 3]



[Drawing 4]



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